West Virginia

West Virginia had the thirty-fifth largest population and the twenty-first largest utility generating capability in 1996. The discrepancy in rankings is among the largest of all States. In 1996, coal-fired units made up over 99 percent of generating capability and net generation in the State. This reflects the fact that, in 1996, West Virginia was a leading producer of coal in the United States, second only to Wyoming.[1] Bituminous coal underlies more than two-thirds of West Virginia. Over half the coal mined is delivered to electric utilities outside the State, mostly in Pennsylvania and Ohio. Of the coal that stays in the State, most is consumed by the electric power industry. The proximity of the coal-fired plants to their fuel source results in low transportation costs and allows West Virginia utilities to offer rates lower than the national average. At 5.21 cents per kilowatthour, West Virginians enjoy the seventh least expensive electricity in the Nation.

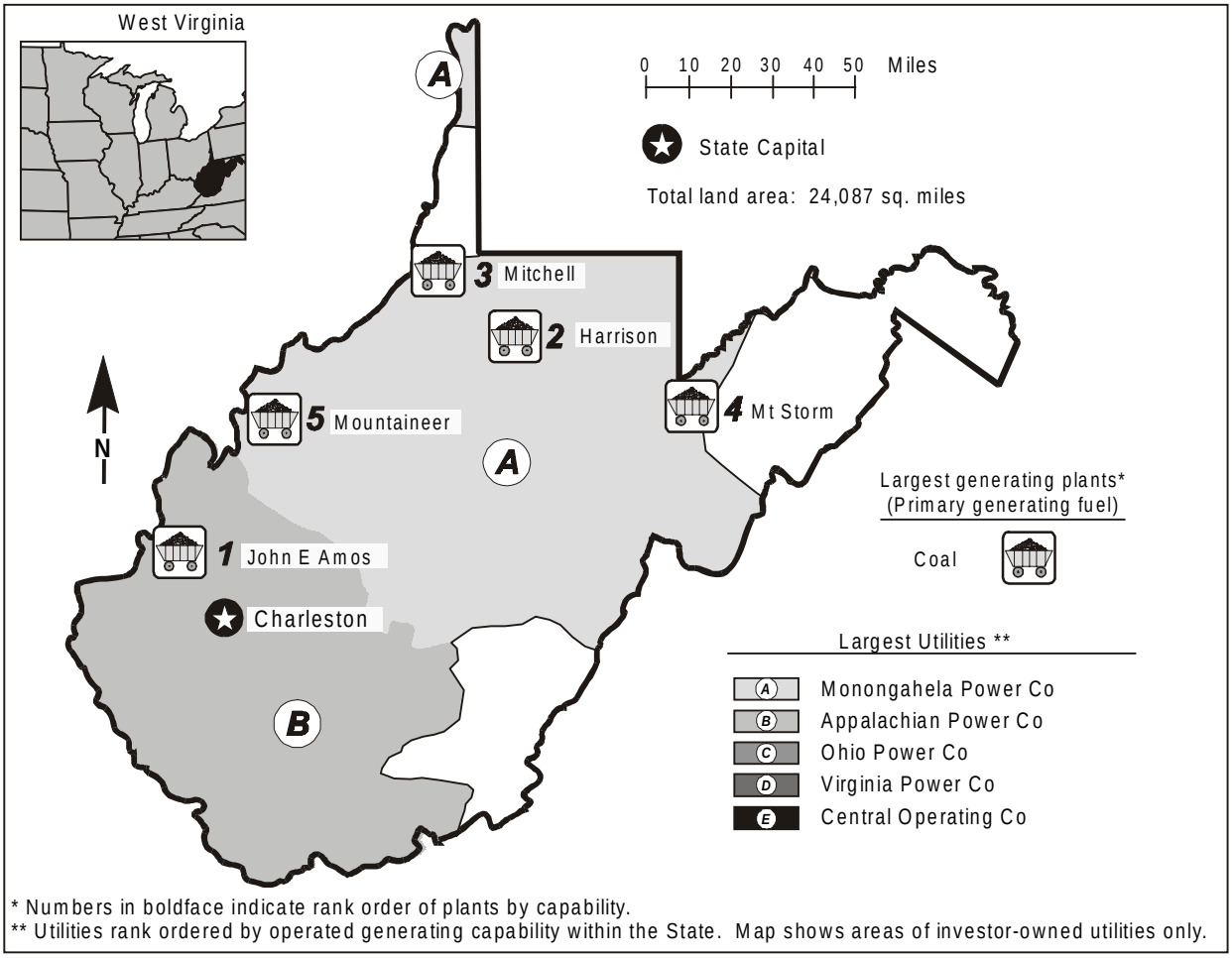
The five largest plants are all coal-fired. The largest plant in the State is Appalachian Power Company's John E. Amos plant near Charleston. These five plants are located along the western and eastern frontiers of the State. West Virginia has no nuclear generating capability. There is a small amount of hydroelectric and oil-fired capability in the State. The largest utility in West Virginia in terms of operated generating capability is the Monongahela Power Company, with Appalachian Power Company a close second. In 1986, coal units represented 98.7 percent of West Virginia's utility generating capability and 99.2 percent of utility net generation. In 1996, the coal share of capability had risen to 99.5 percent, while the net generation share fell to 99.1 percent. Hydroelectric capability and net generation, on the other hand, were 1.3 percent and 0.5 percent, respectively, in 1986. By 1996, the hydroelectric capability fell to 0.4 percent, while the net generation share rose to 0.6 percent.

The Clean Air Act Amendments of 1990 specified a number of utility plants to begin compliance with stricter emissions standards for sulfur dioxide (SO_2) and nitrogen oxides (NO_x). These plants included 7,352 megawatts of nameplate capacity at 6 West Virginia plants. In 1996, West Virginia's emissions of SO_2, NO_x, and carbon dioxide (CO_2) ranked fourth, ninth and eleventh, respectively. West Virginia SO_2 emissions accounted for 6 percent of all electric power industry SO_2 emissions in the United States. The concentrations of these emissions per square mile in 1996 ranked second, fifth and seventh, respectively. Emissions of SO_2 increased from 1986 to 1991, but they declined below 1986 levels in 1996. NO_x and CO_2 totals declined in 1991 over 1986 levels and then both increased from 1991 to 1996 above their 1986 levels. It is likely that West Virginia will need to design a State implementation plan (SIP) for reducing ground-level ozone in response to a proposal released by the Environmental Protection Agency (EPA) in October 1998. The EPA SIP call proposal does not mandate which sources must reduce pollution. However, EPA states that utilities would be one of the most likely sources of NO_x emissions reductions.

In December 1996, the State's Public Service Commission (PSC) opened a formal investigation into restructuring the electric power industry in West Virginia, and in March 1998, the legislature authorized the PSC to determine whether restructuring would benefit ratepayers and draft a restructuring plan if it was deemed to be in the interest of consumers. The PSC is conducting workshops where comments to a developing plan to restructure the industry can be made by the various special interest groups, ranging from low-income consumers to large industrial customers, power marketers, and utilities. Since West Virginia has relatively low electricity rates, there is a lack of interest in introducing competition in order to lower prices. Nearby States that are much further along in the process of restructuring their electric power industries may have an affect on eventually restructuring the electric power industry in West Virginia.[2]

[1]Energy Information Administration, *State Coal Profiles*, DOE/EIA-0576 (Washington, DC, January 1994), p. 103.

[2]Energy Information Administration, Status of State Electic Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html.



* Numbers in boldface indicate rank order of plants by capability.
** Utilities rank ordered by operated generating capability within the State. Map shows areas of investor-owned utilities only.

Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank
NERC Region(s)		ECAR
Net Exporter or Importer		Exporter
State Primary Generating Fuel		Coal
Population (as of 7/96)	1,820,407	35
Average Revenue (cents/kWh)	5.21	[a]7
Industry		
Capability (MWe)	15,012	[b]20
Generation (MWh)	87,251,394	[b]15
Capability/person (KWe/person)	8.25	[b]1
Generation/person (MWh/person)	47.93	[b]1
Sulfur Dioxide Emissions (Thousand Short Tons)	841	4
Nitrogen Oxide Emissions (Thousand Short Tons)	316	9
Carbon Dioxide Emissions (Thousand Short Tons)	81,341	11
Sulfur Dioxide/sq. mile (Tons)	34.90	2
Nitrogen Oxides/sq. mile (Tons)	13.14	5
Carbon Dioxide/sq. mile (Tons)	3,376.97	7

Item	Value	U.S. Rank
Utility		
Capability (MWe)	14,448	21
Generation (MWh)	83,978,125	16
Average Age of Coal Plants	26 years	
Average Age of Oil-fired Plants	29 years	
Average Age of Gas-fired Plants	--	
Average Age of Nuclear Plants	--	
Average Age of Hydroelectric Plants	70 years	
Average Age of Other Plants	--	
Nonutility[c]		
Capability (MWe)	564	28
Percentage Share of Capability	3.8	35
Generation (MWh)	3,273,269	24
Percentage Share of Generation	3.8	34

-- = Not applicable.

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capability (MWe)
1. John E Amos	Coal	Appalachian Power Co	2,900
2. Harrison	Coal	Monongahela Power Co	1,920
3. Mitchell	Coal	Ohio Power Co	1,600
4. Mt Storm	Coal	Virginia Power Co	1,599
5. Mountaineer (1301)	Coal	Appalachian Power Co	1,300

Table 3. Top Five Utilities with Largest Generating Capability, and Type, Within the State, 1996
(Megawatts Electric)

Utility	Net Summer Capability	Net Coal Capability	Net Oil Capability	Net Gas Capability	Net Nuclear Capability	Net Hydro/Other Capability
A. Monongahela Power Co	4,910	4,910	--	--	--	--
B. Appalachian Power Co	4,590	4,590	--	--	--	--
C. Ohio Power Co	2,200	2,200	--	--	--	--
D. Virginia Power Co	1,673	1,661	12	--	--	--
E. Central Operating Co	1,020	1,020	--	--	--	--
Total	14,393	14,381	12	--	--	--
Percentage of Industry Capability	95.9	--	--	--	--	--

-- = Not applicable.

Figure 1. Utility Generating Capability by Primary Energy Source, 1996

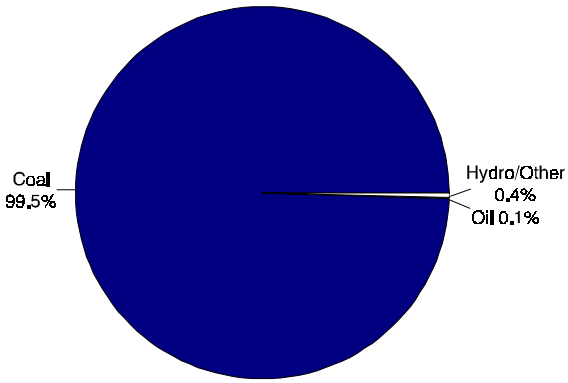


Figure 2. Utility Generation by Primary Energy Source, 1996

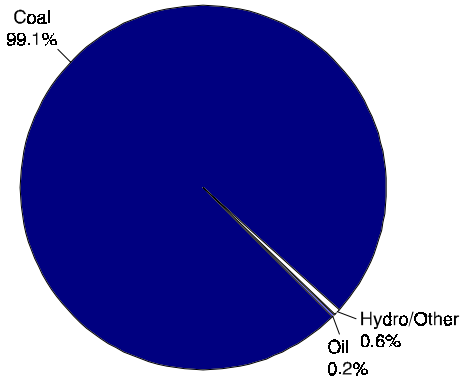


Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

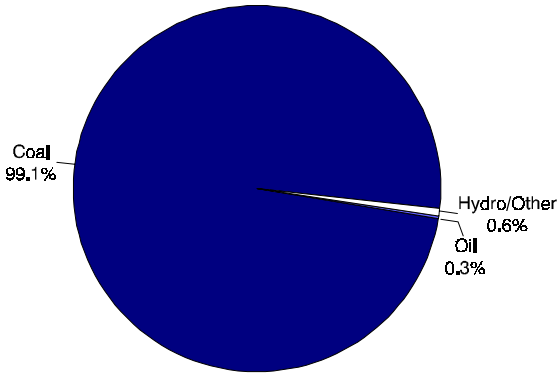


Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	14,295	14,315	14,381	*98.7*	*99.2*	*99.5*
Oil	12	12	12	*0.1*	*0.1*	*0.1*
Gas	--	--	--	--	--	--
Nuclear	--	--	--	--	--	--
Hydro/Other	183	108	55	*1.3*	*0.7*	*0.4*
Total Utility	14,490	14,435	14,448	*100.0*	*100.0*	*100.0*
Total Nonutility	451	W	564	--	--	--

-- = Not applicable. W = Withheld.

Table 5. Electric Power Industry Generation of Electricity by Primary Energy Source, 1986, 1991, and 1996
(Thousand Kilowatthours)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	76,876,026	70,648,850	83,257,133	*99.2*	*99.2*	*99.1*
Oil	256,243	231,940	203,950	*0.3*	*0.3*	*0.2*
Gas	26,553	17,146	20,334	*(s)*	*(s)*	*(s)*
Nuclear	--	--	--	--	--	--
Hydro/Other	360,903	356,180	496,708	*0.5*	*0.5*	*0.6*
Total Utility	77,519,725	71,254,116	83,978,125	*100.0*	*100.0*	*100.0*
Total Nonutility	1,942,071	W	3,273,269	--	--	--

-- = Not applicable. (s) = Nonzero percentage less than 0.05. W = Withheld.

Table 6. Electric Power Industry Consumption by Primary Energy Source, 1986, 1991, and 1996
(Quadrillion Btu)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	0.765	0.689	0.811	*99.2*	*99.2*	*99.1*
Oil	0.002	0.002	0.002	*0.3*	*0.3*	*0.3*
Gas	(s)	(s)	(s)	--	--	--
Nuclear	--	--	--	--	--	--
Hydro/Other	0.004	0.004	0.005	*0.5*	*0.5*	*0.6*
Total Utility	0.771	0.695	0.819	*100.0*	*100.0*	*100.0*
Total Nonutility	0.021	W	0.051	--	--	--

-- = Not applicable. (s) = Nonzero value less than 0.0005. W = Withheld.

Figure 4. Utility Generation of Electricity by Primary Energy Source, 1986-1996

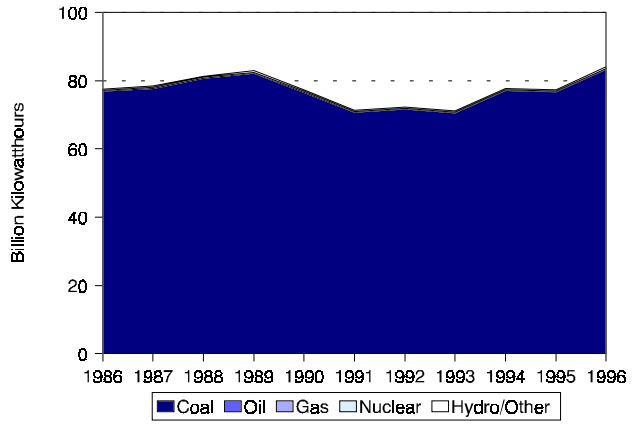


Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996
(1996 Dollars)

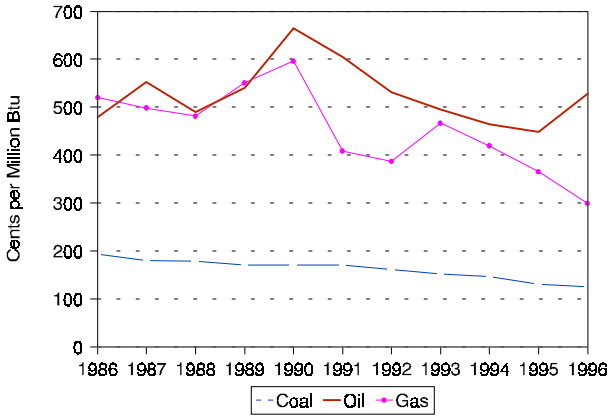


Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	193.3	170.5	124.9	-4.3
Oil	478.5	604.0	528.7	1.0
Gas	519.8	408.4	299.0	-5.4

Table 8. Electric Power Industry Emissions Estimates, 1986, 1991, and 1996
(Thousand Short Tons)

Emission Type	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Sulfur Dioxide	899	1,057	841	-0.7
Nitrogen Oxides[d] . .	313	292	316	0.1
Carbon Dioxide[d] . . .	77,678	73,982	81,341	0.5

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

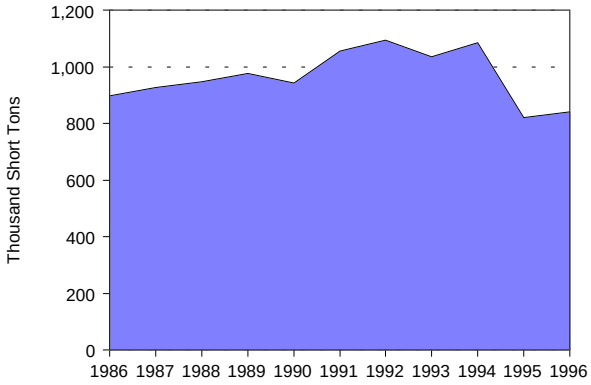


Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

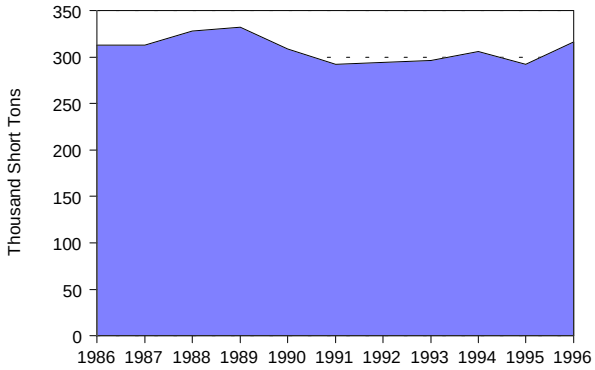


Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

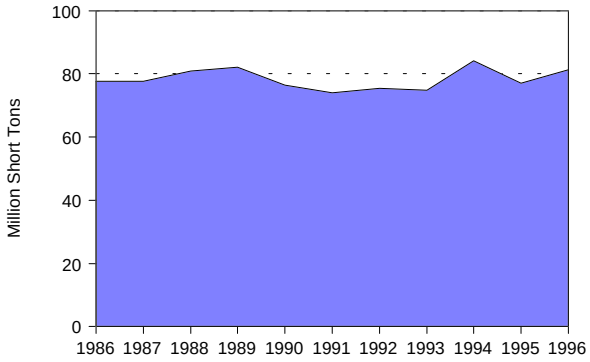


Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . .	6,982,644	8,106,273	9,276,528	2.9	33.9	34.3	35.5
Commercial	4,512,596	5,218,905	5,936,377	2.8	21.9	22.1	22.7
Industrial . . .	9,003,349	10,205,954	10,820,337	1.9	43.7	43.2	41.4
Other	104,310	93,813	93,536	-1.1	0.5	0.4	0.4
Total	20,602,900	23,624,945	26,126,778	2.4	100.0	100.0	100.0

Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
			1986		
Number of Utilities	14	2	--	3	19
Number of Retail Customers	820,896	3,577	--	6,897	831,370
Retail Sales (MWh)	20,501,196	50,405	--	51,299	20,602,900
Percentage of Retail Sales	99.5	0.2	--	0.3	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	1,333,142	3,564	--	4,885	1,341,592
Percentage of Revenue	99.4	0.3	--	0.4	100.0
			1991		
Number of Utilities	12	2	--	3	17
Number of Retail Customers	856,819	4,165	--	7,460	868,444
Retail Sales (MWh)	23,506,230	57,232	--	61,483	23,624,945
Percentage of Retail Sales	99.5	0.2	--	0.3	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	1,276,182	3,968	--	6,065	1,286,215
Percentage of Revenue	99.2	0.3	--	0.5	100.0
			1996		
Number of Utilities	12	2	--	3	17
Number of Retail Customers	904,070	3,531	--	8,231	915,832
Retail Sales (MWh)	25,989,991	60,110	--	76,677	26,126,778
Percentage of Retail Sales	99.5	0.2	--	0.3	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	1,350,892	3,980	--	7,154	1,362,026
Percentage of Revenue	99.2	0.3	--	0.5	100.0

-- = Not applicable.